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ABSTRACT

Reported are data regarding spending in the United States for 1977 and comparisons with past years. R&D spending is expected to reach $40.8 billion in 1977, 9% above the level of 1976. Basic research spending is expected to reach $5.2 billion in 1977, an increase of 8% over 1976. Applied research is expected to increase by 8.5% over 1976. Development spending is expected to reach nearly $27 billion. An estimated 542,000 scientists and engineers were employed in the U.S. in 1976. Several tables are included. (RH)

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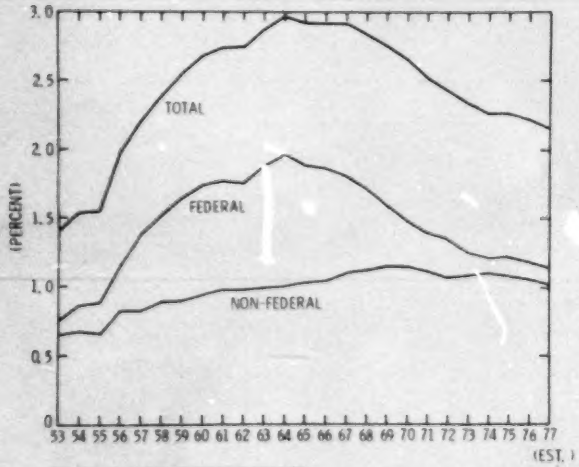
SCIENCE RESOURCES STUDIES HIGHLIGHTS

NATIONAL SCIENCE FOUNDATION • WASHINGTON, D.C. 20550 • MARCH 31, 1977 • NSF 77-306

R&D Spending Reaches Nearly $41 Billion in 1977

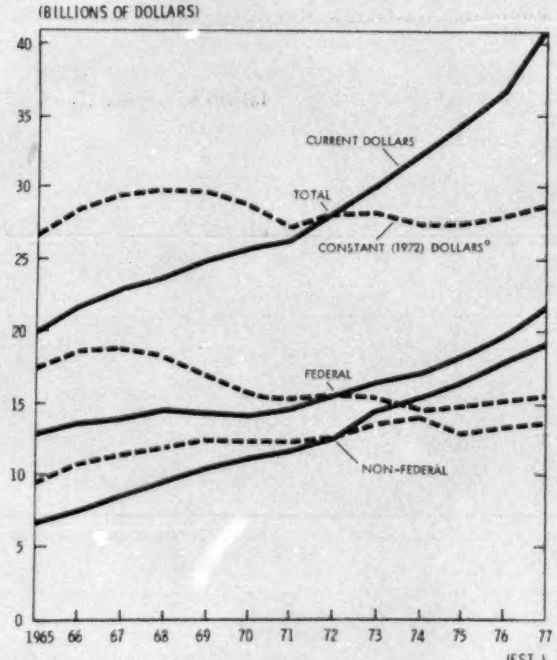
- R&D spending in the United States is expected to reach $40.8 billion in 1977, 9 percent above the 1976 level of $37.4 billion. For the second consecutive year, R&D funds are also expected to increase in terms of constant dollars—3 percent—assuming a 5.5-percent inflation rate for 1977.
- R&D expenditures are expected to constitute 2.2 percent of the U.S. gross national product (GNP), about the same as in 1976. This proportion has declined steadily from its peak of 3.0 percent in 1964, primarily as a result of the slowdown in growth of Federal R&D spending.
- Basic research spending is expected to reach $5.2 billion in 1977, an increase of 8 percent over 1976. In terms of constant dollars, funds for basic research are expected to grow 3 percent. Applied research is expected to increase by 8.5 percent in current dollars over the 1976 figure. Development spending is expected to reach nearly $27 billion, an increase of 9.5 percent over the previous year.
- An estimated 542,000 scientists and engineers were employed in the United States in 1976, 2 percent more than in 1975. Historically, about one-third of all scientists and engineers are employed in R&D activities.

R&D AS A PERCENT OF THE GNP, 1953-77



SOURCE: NATIONAL SCIENCE FOUNDATION

NATIONAL RESEARCH AND DEVELOPMENT EXPENDITURES: 1965-77



* BASED ON GNP IMPLICIT PRICE DEFLATOR

(Prepared in the Industry Studies Group, Division of Science Resources Studies)

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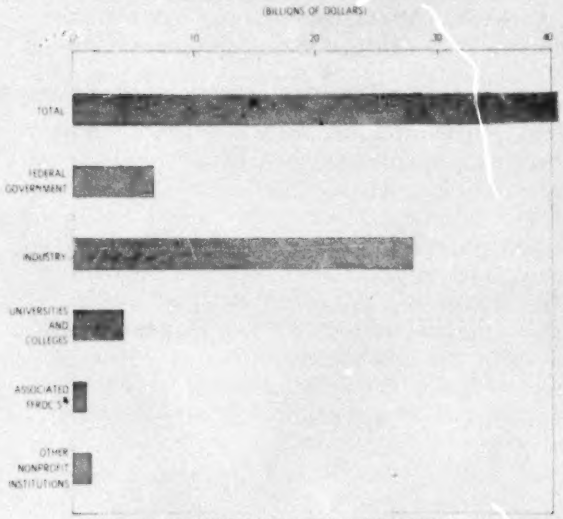
R&D Support

The Federal Government is expected to spend $21.8 billion on R&D programs in 1977, 10 percent more than in the previous year. Measured in constant dollars, Federal support of research and development will show a 4-percent constant-dollar increase over 1976, in contrast to an average annual rate of decline of 1.6 percent between 1967 and 1976. This increase results from significant increases for the Department of Defense, National Aeronautics and Space Administration, and the Energy Research and Development Administration. The Federal Government is expected to fund 53 percent of the total U.S. R&D effort in 1977, a slightly higher percentage than in the previous year.

Non-Federal R&D support is expected to increase by 8 percent over the 1976 level, to $19.0 billion in 1977. Industry will provide 92 percent, or $17.5 billion of the non-Federal R&D funds.

PERFORMANCE OF RESEARCH AND DEVELOPMENT: 1977



* FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS ADMINISTERED BY UNIVERSITIES AND COLLEGES

SOURCE: NATIONAL SCIENCE FOUNDATION

R&D Performance

Industry will remain the dominant performer of research and development in 1977, spending an estimated $27.8 billion on R&D projects, or 68 percent of the total. Industry leads in the performance of applied research and development, spending 56 percent and 82 percent, respectively, of the total funds for these activities.

Universities and colleges, which perform about 10 percent of the Nation's research and development—and, more importantly, about 54 percent of the Nation's basic research—are expected to spend $4.0 billion for research and development in 1977, 8 percent more than reported in 1976.

Federal performance of research and development is also expected to increase in 1977, as is that of nonprofit institutions.

Funds for research and development by performer: 1973-77
[Millions of dollars]

Year	Total	Federal Government	Industry[1]	Universities & colleges	Associated FFRDC's[2]	Other nonprofit institutions[1]
1973	$30,303	$4,619	$20,921	$2,940	$817	$1,006
1974	32,260	4,815	22,399	3,017	865	1,164
1975	34,558	5,395	23,540	3,393	987	1,243
1976(est.)	37,363	5,800	25,500	3,660	1,080	1,323
1977(est.)	40,800	6,500	27,750	3,956	1,177	1,417

[1] Expenditures for Federally Funded Research & Development Centers administered by both industry and by nonprofit institutions are included in the totals of their respective sectors.

[2] FFRDC's administered by individual universities and colleges and by university consortia.

SOURCE: National Science Foundation

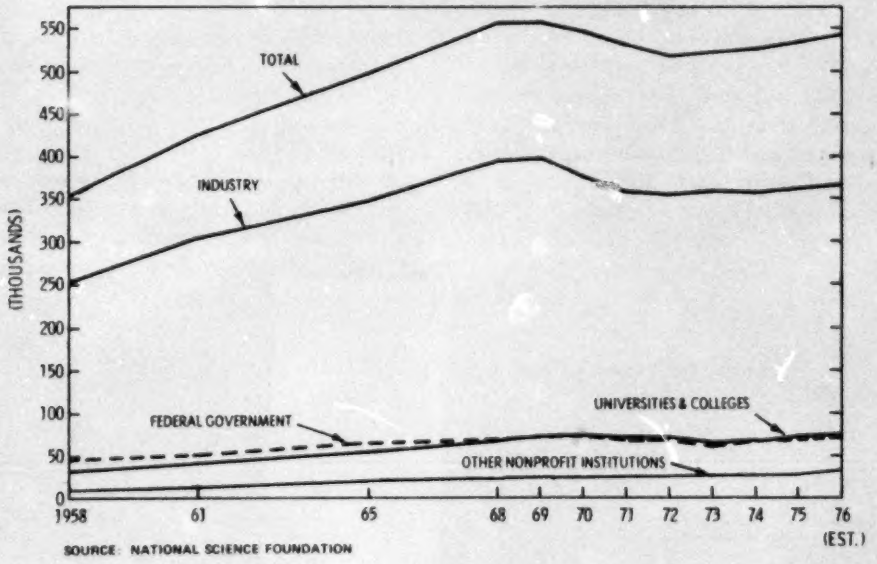
R&D Scientists and Engineers

About 542,000 scientists and engineers were performing R&D activities on a full-time-equivalent (FTE) basis during 1976 in all sectors of the economy. This level, a result of 4 years of employment increases since the 1972 trough of 519,000, represents a recovery of over one-half the 40,000 jobs lost between 1969 and 1973. All sectors of the economy participated in the recovery. Private industry, however, contributed least in terms of its proportion of total R&D employment, while universities and other nonprofit institutions grew at the fastest rates since 1973. Thus the share of all R&D scientists and engineers employed by industry has declined from about 75 percent in the early 1960's to 69 percent by 1969 and to 67 percent by 1976.

* * * *

These data were compiled from information on R&D activities collected through individual sector surveys conducted as part of a comprehensive program to measure and analyze the Nation's resources expended for research and development. Details on R&D expenditures and manpower will be published in a report entitled *National Patterns of R&D Resources: Funds and Manpower in the United States, 1953-1977* to be available in the summer of 1977 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

FULL-TIME-EQUIVALENT SCIENTISTS AND ENGINEERS EMPLOYED IN R&D BY SECTOR: SELECTED YEARS



SOURCE: NATIONAL SCIENCE FOUNDATION